

MAIN WELFARE INDICATORS IN DOLPHINS IN CAPTIVITY

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INTRODUCTION AND OBJECTIVES

Dolphins have been in captivity for more than 150 years and the bottlenose dolphin (*Tursiops truncatus*) is the most frequent species under these conditions.

Dolphins in a captive setting feel stress. Consequently, a variety of biological reactions trigger a behavioural change. However, this does not usually happen. As a result, the stress evaluation becomes complex to measure. Due to the aforementioned information, it is of utmost importance to know how to measure the stress, for example by using salivary cortisol.

The main objective of this review is to make a compilation of the retrospective studies about welfare in captive dolphins.

WHAT IS WELFARE?

Welfare is determined by physical and psychological conditions of an individual and it is independent of our perception of welfare.

There are many studies on well-being in the field of ranching. For this reason, our understanding has improved in the last few years and we can use it to enhance the conditions of zoological animals.

There are two ways of measuring welfare: animal-based measures or resource-based measures. The first ones are more precise and they are better to use when assessing welfare.

WELFARE INDICATORS

1. FEEDING

1.1. Absence of prolonged hunger

- Body condition score (1-5)

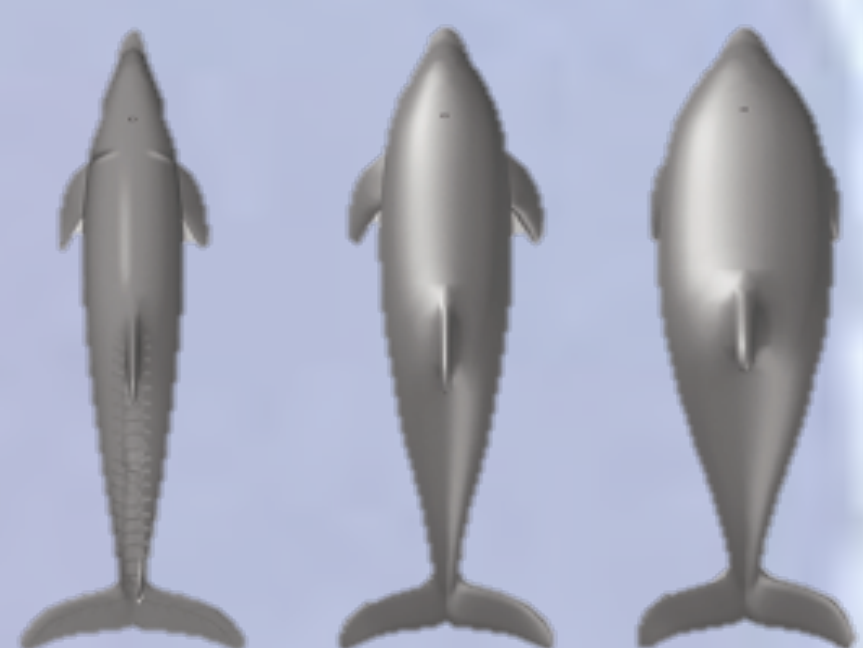


Figure 1. BCS in dolphins.

- Frequency of weight measurements
- Dietary records

1.2. Absence of prolonged thirst

- Capillary refill time
- Hydration protocol

2. HOUSING

2.1. Resting comfort

- Time budget

2.2. Thermal comfort

- Frequency of water temperature testing
- Water temperature and diet
- Shade

2.3. Appropriate environment

- Topography
- Ability to exhibit complex movements
- Water quality
- Enrichment

3. HEALTH

3.1. Absence of injuries

- Total wound threshold
- Wounds from enclosure

3.2. Absence of disease

- Respiratory system
- Eye disease
- Skin disease
- Blood parameters

3.3. Absence of pain induced by management procedures

- Blood draw
- Gastric tubing
- Emergency containment training

4. APPROPRIATE BEHAVIOUR

4.1. Expression of social behaviour

- Presence of social behaviours

4.2. Absence of abnormal behaviours

- Stereotypic behaviour

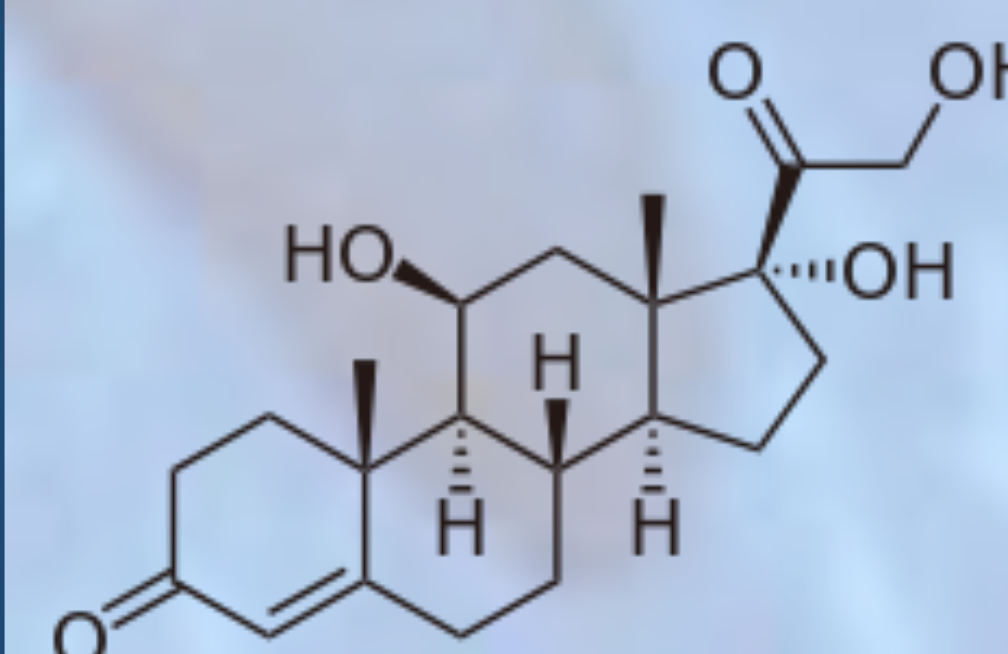
4.3. Positive human-animal relationship

- Response to trainer while not under stimulus control
- Non-food tactile interactions
- Swim-with-dolphin

5. PHYSIOLOGICAL INDICATORS

5.1. Salivary cortisol

5.2. Fecal corticosteroids



CONCLUSIONS

- Due to the lack of welfare studies it is necessary to continue with the research in order to increase our knowledge and thus improve the conditions of these animals.
- These studies have to be founded on animal-based measures and they should have bigger sample sizes to get more realistic conclusions.
- Salivary cortisol used as a welfare indicator could be used as an indicator to quantify objectively the stress an animal suffers.
- An important thing to keep in mind is social behaviour, specially playing behaviour. When we observe it may indicate good welfare.
- There is not only a single important welfare indicator, **welfare must be considered as a whole of conditions and all of them should be achieved.**